



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,988	08/22/2003	Darius D. Gaskins	CNTR.2209	1141
23669 7590 10/30/2007 HUFFMAN LAW GROUP, P.C. 1900 MESA AVE. COLORADO SPRINGS, CO 80906			EXAMINER CONNOLLY, MARK A	
			ART UNIT 2115	PAPER NUMBER
			NOTIFICATION DATE 10/30/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO@HUFFMANLAW.NET

Office Action Summary	Application No.	Applicant(s)	
	10/646,988	GASKINS ET AL.	
	Examiner	Art Unit	
	Mark Connolly	2115	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/21/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-22 have been presented for examination.
2. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mittal¹ in view of Browning et al [Browning] US Pat No 6415388.
5. Referring to claim 1, Mittal teaches the apparatus within a microprocessor for managing power consumption of the microprocessor [col. 2 lines 14-19] substantially, including:
 - a. a plurality of functional units each including a corresponding plurality of activity outputs, for indicating when a respective functional unit is enabled [105 and 501 figs. 1 and 5].
 - b. utilization assessment logic, coupled to said plurality of activity outputs, for assessing activity thereof to determine a current total power consumption value for the microprocessor [col. 5 lines 30-42 and col. 11 lines 54-58].
 - c. power control logic, coupled to said utilization assessment logic, for comparing said current total power consumption value with a threshold power value included in a specified power profile, wherein a select signal directs said power control logic to select said specified power profile from a plurality of power profiles that are stored within said

¹ As cited in the previous office action

power control logic [col. 5 lines 30-42 and col. 11 lines 54-58]. Although a select signal is not explicitly taught, Mittal teaches engaging one of a plurality of power modes (i.e. power profile) in response to the utilization (i.e. power consumption) being greater or less than a threshold value. In order to trigger this response, it is obvious if not inherent that a signal would have to be generated in order to select the appropriate power mode. In addition, because the mode controller (107/502) initiates the change between a normal and reduced power mode without any explicit teaching of loading the power mode settings (i.e. power profile) from outside the mode controller, it is interpreted that the power profiles selected by the power control logic are selected from profiles stored within the power control logic.

d. a power consumption controller, coupled to said power management logic and said plurality of functional units, for engaging power reduction mode if said current total power consumption value exceeds said threshold power value [abstract and col. 5 lines 25-29]. Because the activity monitor and mode controller compare the power consumption value with a threshold value, selects a power mode in response to the comparison and engages that power mode, it is interpreted that the activity monitor and mode controller comprises the utilization assessment logic, power control logic and power consumption controller as they perform the same functions.

Although Mittal implicitly teaches a select signal for selecting between power modes, it is not explicitly taught to have a select signal for selecting one of a plurality of power reduction modes to be engaged if the current total power consumption value exceeds said threshold power value. Browning teaches selecting a power mode from a plurality of power modes including a

Art Unit: 2115

plurality of power reduction modes [figs. 6 and 7 and cols. 5-7 lines 64-8]. To summarize, Browning teaches having multiple temperature thresholds and initiating a power mode based on the current temperature. For example, when the temperature or power consumption of a processor is below threshold T1, the processor enters a first high power/performance state. When the processor temperature or power consumption is above threshold T1 but below threshold T2, the processor enters a second power/performance state that is lower than the first high power/performance state. Finally, if the temperature or power consumption of the processor is above threshold T2, the processor enters a power/performance state that is even lower than the second power/performance state.

It would have been obvious to one of ordinary skill in the art to include the plurality of reduced power states and to generate a selection signal to select one of the reduced power states to be engaged, by power control logic and power consumption controller (i.e. activity monitor and mode controller), because it would obviously introduce varying degrees of performance throttling based on necessity, thus optimizing system performance. In particular, supplying just a single lower power mode does not optimize system operation. For example, if running a processor at a maximum rate and the temperature begins to overheat just slightly, an aggressive power reduced mode may not be necessary. By including a reduced power mode that is not as aggressive, power consumption and temperature can be reduced while still providing substantial performance. On the other hand if running the same processor at the same maximum rate and the processor begins to experience substantial overheating, the same aggressive power reduced mode would be necessary to rapidly reduce the temperature and power consumption at the expense of performance to prevent imminent damage to the processor circuitry. By providing varying

Art Unit: 2115

degrees of performance, the system can maintain optimal performance given its current operating environment.

6. Referring to claims 2-6, applicant(s) numerous definitions of a "functional unit" (claims 2-6) is construed to be an admission that the criticality does not reside in the type of "functional unit" utilized and hence obvious variations of one another. Mittal explicitly teaches a functional unit as being a functional unit as being a cache [col. 7 lines 43-50, col. 10 lines 52-59 and col. 11 lines 54-58]. Not accessing a cache is interpreted as disabling the usage of the cache. In addition, Mittal teaches that branch predictors and floating point units also consume substantial amounts of power just like cache memories [col. 2 lines 25-31 and col. 3 lines 5-8]. Furthermore, Mittal teaches reducing the rate of instructions [col. 3 lines 14-17]. It is interpreted that the instructions would be issued to an execute unit.

7. Referring to claims 7 and 8, Mittal teaches reducing a voltage and/or clock frequency [col. 5 lines 1-4].

8. Referring to claim 9, this is rejected on the same basis as set forth hereinabove. Furthermore, Mittal teaches assessing the activity of individual functional units [fig. 5 and col. 11 lines 38-39 and 54-58].

9. Referring to claim 10, Mittal teaches a control bus coupled between power management logic and power consumption controller [109 fig. 1A and 507, 508 fig. 5, col. 11 lines 54-58 and col. 12 lines 10-16]. In particular, Mittal additionally teaches that power coordinator can adjust the power modes between the functional units based on if utilization exceeds a threshold.

Art Unit: 2115

Therefore the connection between the power coordinator and the activity monitors and power controllers are interpreted as control buses.

10. Referring to claims 11 and 12, Mittal teaches sending commands over a control bus to instruct power consumption controller to control the power consumption of either an individual functional unit or all functional units [fig. 5 and col. 5 lines 25-40 and col. 12 lines 28-41].

11. Referring to claim 13, this is rejected on the same basis as set forth hereinabove.

12. Referring to claim 14, this is rejected on the same basis as set forth hereinabove. Mittal teaches the apparatus and therefore teaches the method performed by the apparatus. In addition, Mittal further teaches prescribing a power profile to the device [col. 5 lines 43-61].

13. Referring to claims 15-22, these are rejected on the same basis as set forth hereinabove.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2115

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Connolly whose telephone number is (571) 272-3666. The examiner can normally be reached on M-F 8AM-5PM (except every first Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas C. Lee can be reached on (571) 272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mark Connolly
Examiner
Art Unit 2115



mc
October 22, 2007